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THERMOTEMPORAL DYNAMICS OF CONTAMINANT BACTERIA AND ANTIMICROBIALS IN EXTENDED PORCINE SEMEN

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Bacterial contamination of extended porcine semen has been associated with deleterious effects on both semen quality and sow fertility. Retrospective, prospective and in vitro studies were performed to delineate the prevalence and behavior of certain bacterial contaminants in extended semen, and antimicrobial pharmacodynamics in various semen diluents. Retrospective review of extended semen samples submitted from North American boar studs for microbiological screening at the University of Pennsylvania Reference Andrology Laboratory in 2005 and 2006 yielded bacteriospermia prevalence rates of 17% (144/832) and 26% (256/984), respectively. In a prospective study of regional boar studs, of 91 extended semen samples tested over 1-y, 29% were positive for bacteriospermia. Retrospective and prospective studies both showed that the preponderance of contaminant positive samples occurred during the fall months ($P < 0.05$). To better understand behavior of select contaminant bacteria, generation intervals were determined for *Serratia marcescens* (SM) and *Achromobacter xylosoxidans* (AX) at 16, 22 and 37 degrees C. Generation times were temperature-dependent, with intervals decreasing two- to four-fold as incubation temperature increased. Growth patterns for SM, AX and *Burkholderia cepacia* were evaluated in various semen diluents. The different diluents exhibited constant or episodic patterns of growth within and among bacteria throughout the 5-d test period. Kill-time kinetics at 37 degrees C of several genera of bacteria in four semen diluents containing amoxicillin, gentamicin, tylosin, and lincomycin/spectinomycin (single drug or combination) ranged from 75 to over 360min, and was highly dependent ($P < 0.05$) upon both type of bacteria and semen diluent.

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